Test Report: RCP-3K1U-12

1000 ~ 3000W 1U Distributed Power System

■ DESIGN VERIFY TEST

Output Function Test
Input Function Test
Protection Function Test
Control Function Test

■ SAFETY & E.M.C. TEST

Safety Test
E.M.C. Test

■ RELIABILITY TEST

ENVIRONMENT TEST

■ DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT
1	MAX. OUTPUT CURRENT	180A	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	180A
2	MAX. OUTPUT POWER	2160W	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	2160W

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	90VAC~264 VAC	I/P：TESTING O/P：FULL LOAD Ta：25℃	83 V~264V
			I/P： LOW-LINE-3V= 87V HIGH-LINE+15%=300 V O/P:FULL/MIN LOAD ON: 30 Sec . OFF: 30 Sec 10MIN (AC POWER ON/OFF NO DAMAGE)	TEST： OK
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE	I/P：100 VAC ~ 264 VAC O/P：FULL~MIN LOAD Ta：25℃	TEST： OK
3	INPUT CURRENT(Typ.) FOR EACH UNIT	230V/ 4.5 A (TYP) 115V/ 8.5 A (TYP)	I/P： 230 VAC I/P： 115 VAC O/P：FULL LOAD Ta：25℃	S.P.S1: 4A / 230VAC 8.1A /115VAC S.P.S2: 4.1A / 230VAC 8.15A / 115VAC S.P.S3: 4.1A / 230VAC 8.12A / 115VAC
4	LEAKAGE CURRENT	< 3.5 mA / 230 VAC	I/P： 264 VAC O/P：Min LOAD Ta：25℃	L-FG： 2.9 mA N-FG： 2.9 mA

CONTROL FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT
1	AUX ILIRY POWER (AUX)	5V @ 0.3A (4.5V~5.3V)	I/P: 230 VAC O/P:0.3A LOAD Ta:25℃	4.99V
2	REMOTE ON/OFFCONTROL	Rc+ / Rc- ON/OFF&- S SHORTS POWER ON ON/OFF&- S OPEN POWER OFF	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	S.P.S1:SHORT POWER ON OK OPEN POWER OFF OK S.P.S2: SHORT POWER ON OK OPEN POWER OFF OK S.P.S3: SHORT POWER ON OK OPEN POWER OFF OK
3	REMOTE SENSE	S+ / S- >0.5V	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	>0.5 V
4	OUTPUT VOLTAGE PROGRAMMABLE	Adjustment of output voltage is allowable to 90 ~ 110% of nominal output voltage. Please refer to the Function Manual	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	External Resistor 90% Voltage= 160 KΩ 110% Voltage= 16.7KΩ
5	DC OK SIGNAL DC NG SIGNAL	High : When Vout ≦80%+/-5%. Low : When Vout ≧80%+/-5%	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	S.P.S1:HIGH : 4.99V LOW: 0.2V S.P.S2:HIGH : 4.99V LOW: 0.2V S.P.S3:HIGH : 4.99V LOW: 0.2V
6	AC OK SIGNAL AC FAIL SIGNAL	Low : When input voltage is≧82Vrms +/-4V. High : When input voltage in≦82Vrms +/-4V.	I/P: TESTING O/P: FULL LOAD Ta:25℃	AC ≥ 85V： 0.1 V AC ≤ 83V： 4.9 V
7	OVER TEMP WARNING	T OK：When the internal temperature (TSW1 & TSW2 short) is within safe limit T-ALARM ： When the internal temperature (TSW1 or TSW2 open) exceeds the limit of temperature alarm	I/P: 230 VAC O/P:FULL LOAD Ta:TEST	S.P.S1:HIGH : 4.98V LOW: 0V S.P.S2:HIGH : 4.99V LOW: 0V S.P.S3:HIGH : 4.98V LOW: 0 V
8	FAN SPEED CONTROL	Fan Voltage : NO LOAD:8.7V ± 1V 100% LOAD:11.8V ± 0.6V	I/P: 230 VAC O/P:TESTING Ta:25℃	Fan Voltage: NO LOAD: 8.04 V 100% LOAD: 11.64 V
9	CURRENT SHARING	RACK1-RACK2 –RACK3< 10%	I/P： 230 VAC O/P：FULL/50% LOAD Ta：25℃	O/P：100% RACK1 PIN W：1112.9W RACK2 PIN W：1107.1W RACK3 PIN W：1112.1W O/P：50% RACK 1 PIN W：580.9 W RACK 2 PIN W：544.5 W RACK 3 PIN W：549.2 W

■ SAFETY & E.M.C. TEST

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P： 3 KVAC/min I/P-FG： 2 KVAC/min O/P-FG： 0.7 KVDC/min	I/P-O/P： 3.6 KVAC/min I/P-FG： 2.4 KVAC/min O/P-FG： 0.84 KVDC/min Ta：25℃	I/P-O/P： 12.9 mA I/P-FG： 9.05 mA O/P-FG： 0.002 mA NO DAMAGE
2	ISOLATION RESISTANCE	I/P-O/P：500VDC>100MΩ I/P-FG： 500VDC>100MΩ O/P-FG：500VDC>100MΩ	I/P-O/P： 500 VDC I/P-FG： 500 VDC O/P-FG： 500 VDC Ta：25℃/70%RH	I/P-O/P： 30 GΩ I/P-FG： 24 GΩ O/P-FG： 11 GΩ NO DAMAGE
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40 A / 2min Ta：25℃ / 70%RH	7 mΩ

E.M.C TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT
1	HARMONIC	EN61000-3-2 CLASS A	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	PASS
2	CONDUCTION	EN55022 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL/50% LOAD Ta:25℃	PASS Test by certified Lab
3	RADIATION	EN55022 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25℃	PASS Test by certified Lab
4	E.S.D	EN61000-4-2 INDUSTRY AIR:8KV / Contact:4KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A
5	E.F.T	EN61000-4-4 INDUSTRY INPUT: 2KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A
6	SURGE	IEC61000-4-5 INDUSTRY L-N :2KV L,N-PE:4KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A
7	Test by certified Lab & Test Report Prepare			

■ RELIABILITY TEST

ENVIRONMENT TEST

<table>
<tr><th>NO</th><th>TEST ITEM</th><th>SPECICATION</th><th>TEST CONDITION</th><th>RESULT</th></tr>
<tr><td>1</td><td>TEMPERATURE RISE TEST</td><td colspan="3">MODEL：RCP-3K1U-24
1. ROOM AMBIENT BURN-IN：1.5HRS
I/P: 230VAC O/P: FULL LOAD Ta= 36.5℃
2. HIGH AMBIENT BURN-IN：3HRS
I/P: 230VAC O/P: FULL LOAD Ta= 53.7℃

<table>
<tr><th>NO</th><th>Position</th><th>ROOM AMBIENT
Ta= 36.5 ℃</th><th>HIGH AMBIENT
Ta= 53.7℃</th></tr>
<tr><td>1</td><td>D2</td><td>38.7℃</td><td>51.9℃</td></tr>
<tr><td>2</td><td>TSW1</td><td>44.6℃</td><td>58.4℃</td></tr>
<tr><td>3</td><td>U1</td><td>40.7℃</td><td>54.3℃</td></tr>
<tr><td>4</td><td>Q1</td><td>45.7℃</td><td>59.4℃</td></tr>
<tr><td>5</td><td>BD1</td><td>49.1℃</td><td>62.6℃</td></tr>
<tr><td>6</td><td>L2</td><td>59.2℃</td><td>72.4℃</td></tr>
<tr><td>7</td><td>LF1</td><td>47.6℃</td><td>61.2℃</td></tr>
<tr><td>8</td><td>C7</td><td>38.8℃</td><td>52.4℃</td></tr>
<tr><td>9</td><td>D901</td><td>44.1℃</td><td>59.2℃</td></tr>
<tr><td>10</td><td>T2 COIL</td><td>47.5℃</td><td>61.3℃</td></tr>
<tr><td>11</td><td>Q906</td><td>61.1℃</td><td>74.9℃</td></tr>
<tr><td>12</td><td>L100</td><td>62.7℃</td><td>76.8℃</td></tr>
<tr><td>13</td><td>D101</td><td>63.9℃</td><td>77.8℃</td></tr>
<tr><td>14</td><td>U2</td><td>42.4℃</td><td>58.1℃</td></tr>
<tr><td>15</td><td>TSW2</td><td>58.1℃</td><td>71.8℃</td></tr>
<tr><td>16</td><td>C110</td><td>56.1℃</td><td>69.7℃</td></tr>
<tr><td>17</td><td>C75</td><td>40.1℃</td><td>54.2℃</td></tr>
<tr><td>18</td><td>U507</td><td>46.1℃</td><td>59.4℃</td></tr>
</table>
</td></tr>
<tr><td>2</td><td>OVER LOAD BURN-IN TEST</td><td>NO DAMAGE
1 HOUR (MIN)</td><td>I/P: 230 VAC
O/P: 118% LOAD
Ta:25℃</td><td>TEST：OK</td></tr>
<tr><td>3</td><td>LOW TEMPERATURE
TURN ON TEST</td><td>TURN ON AFTER 2 HOUR</td><td>I/P: 230 VAC
O/P: 100% LOAD
Ta= -20℃</td><td>TEST：OK</td></tr>
<tr><td>4</td><td>HIGH HUMIDITY
HIGH TEMPERATURE
HIGH VOLTAGE
TURN ON TEST</td><td>AFTER 12 HOURS
IN CHAMBER ON
CONTROL 50 ℃
NO DAMAGE</td><td>I/P: 272 VAC
O/P:FULL LOAD
Ta= 50℃
HUMIDITY= 95 %R.H</td><td>TEST：OK</td></tr>
<tr><td>5</td><td>TEMPERATURE
COEFFICIENT</td><td>± 0.02 %(0~50℃)</td><td>I/P: 230 VAC
O/P:FULL LOAD</td><td>± 0.003 %(0~50℃)</td></tr>
<tr><td>6</td><td>STORAGE TEMPERATURE TEST</td><td colspan="2">1. Thermal shock Temperature： -45℃~ +90℃
2. Temperature change rate ：25℃ / MIN
3. Dwell time low and high temperature ： 30 MIN/EACH
4. Total test cycle：5 CYCLE
5. Input/Output condition： STATIC</td><td>OK</td></tr>
<tr><td>7</td><td>THERMAL SHOCK TEST</td><td colspan="2">1. Thermal shock Temperature： -25℃~ +55℃
2. Temperature change rate ：25℃ / MIN
3. Dwell time low and high temperature ： 30 MIN/EACH
4. Total test cycle：10 CYCLE
5. Input/Output condition： 230VAC/Full Load AC ON/OFF TEST
turn on 58sec；turn off 2sec</td><td>OK</td></tr>
</table>

8	VIBRATION TEST	1 Carton & 1 Set (1) Waveform: Sine Wave (2) Frequency:10~500Hz (3) Sweep Time:10min/sweep cycle (4) Acceleration:2G (5) Test Time:1 hour in each axis (X.Y.Z) (6) Ta:25℃	TEST：OK
9	CAPACITOR LIFE CYCLE	RCP-3K1U-24 : SUPPOSE C110 IS THE MOST CRITICAL COMPONENT I/P: 230VAC O/P:FULL LOAD Ta= 25 ℃ LIFE TIME= 777098 HRS I/P: 230VAC O/P:FULL LOAD Ta= 50 ℃ LIFE TIME= 176323 HRS	

TEST RESULT	TESTER	APPROVAL
PASS	SANFORD SU	VINCENT TSENG

12.10.30 A50-F031